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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

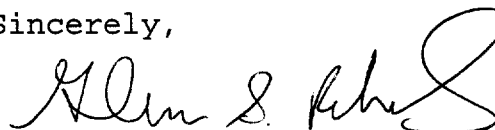
William F. Caton, Acting Secretary
Federal Communications Commission
1919 M Street, N.W.
Washington, D.C. 20554

Dear Mr. Caton:

Enclosed for filing on behalf of Personal Communications Satellite Corporation ("PCSAT") are an original and nine copies of a Petition for Rulemaking to allocate the 1970-1990 MHz and 2160-2180 MHz bands to the Mobile Satellite Service ("MSS"). Attached to the Petition is a copy of PCSAT's application to construct an MSS system in the bands. The application is being filed today through the Mellon Bank in Pittsburgh. Please place both the Petition and the application together in the rulemaking file.

Please call the undersigned if you have any questions.

Sincerely,



Glenn S. Richards
Counsel to Personal Communications
Satellite Corporation

GSR/les
Enclosures
4232-011.L

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BEFORE THE
Federal Communications Commission

WASHINGTON, D.C.

In the Matter of)
)
AMENDMENT OF PART 2 OF) RM-
THE COMMISSION'S RULES)
)
For an allocation of the 1970-1990)
MHz (Earth-to-space) and 2160-2180)
MHz (space-to-Earth) Bands to the)
Mobile Satellite Service)

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APR - 7, 1994

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

PETITION FOR RULEMAKING

Personal Communications Satellite Corporation ("PCSAT")
urges the Commission to allocate domestically the following bands
to the Mobile Satellite Service ("MSS"): 1970-1990 MHz
(Earth-to-space) and 2160-2180 MHz (space-to-Earth).^{1/} These
bands already are allocated to MSS internationally, largely as a
result of U.S. efforts, have been reserved for MSS domestically,
and are adjacent to the frequencies recently allocated by the
Commission for ground-based Personal Communications Services
("PCS").^{2/} As such, the bands are uniquely suited to meeting

^{1/} This is the third petition for rulemaking that has been
filed with the Commission seeking an allocation of these
bands to MSS. See Celsat, Inc. Amendment to Petition for
Rulemaking, RM-7927 (July 7, 1993); TRW, Inc. Petition for
Rulemaking (December 8, 1993).

^{2/} The Commission defines PCS as "a family of mobile or
portable radio communications services that could provide
services to individuals and business and be integrated with
a variety of competing networks." Second Report and Order,
GEN. Docket No. 90-314, 8 FCC Rcd 7700, 7710-12 ¶¶ 19-23
(1993), recon. pending ("PCS Order"). The primary focus of
PCS will be to meet communications requirements of people on
the move. Id.

the spectrum needs of MSS and extending the benefits of PCS to consumers that live, work or travel in areas not covered by terrestrial PCS systems.

PCSAT is a newly-formed subsidiary of American Mobile Satellite Corporation ("AMSC").^{3/} PCSAT is today also filing an application to construct an \$885 million, two-satellite MSS system in the bands that are the subject of this Petition.^{4/} The PCSAT system will support service to several classes of PCS customers and other users in the United States, Puerto Rico, Virgin Islands, and U.S. coastal waters up to 200 miles offshore. The system will be operational within four years of the grant of a license, and is expected to serve over one million customers within five years after operations begin. PCSAT urges the Commission as part of the application process to begin developing rules for licensing systems in the 1970-1990/2160-2180 MHz bands.

A. The Growth of Wireless Communications

In the last ten years, there has been tremendous growth in the use of wireless services for mobile voice and data

^{3/} The major shareholders of AMSC are GM Hughes Electronics Corporation, McCaw Cellular Communications, Inc., Singapore Telecommunications Ltd. and Mobile Telecommunication Technologies Corporation. Another subsidiary of AMSC, AMSC Subsidiary Corporation, is constructing a state-of-the-art MSS-AMS(R)S system in the 1544-1559/1644.5-1660.5 MHz bands. See Memorandum Opinion, Order and Authorization, 4 FCC Rcd 6041 (1989); Final Decision on Remand, 7 FCC Rcd 266 (1992), aff'd sub nom. Aeronautical Radio, Inc. v. FCC, 983 F.2d 275 (1993); Memorandum Opinion and Order, 8 FCC Rcd 4040 (1993).

^{4/} The application is incorporated by reference herein.

communications.^{5/} Advances in cellular, paging, SMR and mobile satellite service have enabled millions of Americans to communicate when and where they want. These advances have whet the appetite of business and consumers for newer, even faster and more convenient mobile communications equipment and services, including wireless PBXs and LANs, smaller, lighter and more versatile mobile phones, high-rate data and fax services, and video.^{6/} These mobile communications services will increase productivity in the workplace, enhance domestic competitiveness in the global marketplace, and provide greater personal freedom and convenience.

In response to this high demand for mobile communication services, the Commission has allocated 160 megahertz of spectrum for PCS, of which 120 MHz (1850-1890 MHz, 1930-1970 MHz, 2130-2150 MHz; and 2180-2200 MHz) is for licensed PCS systems and 40 megahertz (1890-1930 MHz) is for unlicensed PCS.^{7/} PCS licensees are required to offer service to one-third of the population of their service area within five years of being licensed and to 90 percent of the same population within ten years of being licensed, but there is no requirement to serve any

^{5/} There are approximately 33 million subscribers today for mobile voice and data services and that number is expected to triple by 2003. "PCS Demand Forecast," Personal Communications Industry Association, January 1994. The six services included in the PCIA study were PCS, cellular, paging, satellite, SMR and dedicated data.

^{6/} See "A Look Ahead at 1994," Wireless, November 1993, at 18; "1994 Shaping Up as a Watershed Year for Wireless," Network World, December 27, 1993, at 29; "Betting on the Sky," Time, November 22, 1993, at 57.

^{7/} PCS Order, 8 FCC Rcd at 7725 ¶ 56, 7738 ¶ 88.

minimum geographical area.^{8/} The Commission also set aside the bands at issue here as a reserve that might be used for satellite-based PCS, presumably to fill in those areas not served by terrestrial systems.^{9/}

B. The Role of Satellites in PCS

In the wireless environment, satellites have at least two critical roles: (i) providing continuity of service for the user between islands of terrestrially-based services, such as providing service to rural and remote areas^{10/} and (ii) providing a nationwide communications system for law enforcement,

^{8/} Id. at 7754 ¶ 134.

^{9/} Id. at 7783 ¶ 199. AMSC, TRW and Comsat are seeking reconsideration of the PCS Order on the grounds that the Commission also should have preserved the 2180-2200 MHz band for MSS to meet expected demand for the service and to comply with the United States' international obligations to support the WARC MSS allocation. See Petitions of AMSC Subsidiary Corporation, Comsat Corporation and TRW Inc., GEN. Docket No. 90-314 (December 8, 1993).

At this time, PCSAT is not seeking a domestic MSS allocation in the adjacent frequencies (1990-2010/2180-2200 MHz), which also were allocated to MSS at WARC-92. PCSAT encourages the Commission, however, to allocate these bands to MSS for use by MSS systems outside the United States (such as the proposed Inmarsat-P system or U.S. international systems), so that more spectrum will be available to domestic MSS systems operating in the 1970-1990/2160-2180 MHz bands.

^{10/} From the beginning of its consideration of MSS allocations, the Commission has recognized that MSS "would bring first-time service to those who have no other service option or reasonable hope of it, in areas and to populations where the need is critical." Notice of Proposed Rulemaking, GEN. Docket No. 84-1234, 50 Fed. Reg. 8149, 8151 ¶ 8 (February 28, 1985).

public safety and interstate transportation.^{11/} MSS alone can satisfy these requirements for ubiquitous, universal communications. Terrestrial services will never cover the entire land mass of the United States. This characteristic is particularly true for terrestrial PCS, which is expected to use lower power than cellular systems, have smaller coverage areas, and be more expensive to implement in rural and remote areas.

Working together, terrestrial PCS systems and MSS can provide an economical and efficient means of delivering a full range of mobile telecommunications services, including ubiquitous mobile telephone service, paging, data communication and position location services, as well as access to either the Public Switched Telephone Network or private telecommunication facilities. Dual-mode phones will permit use on both MSS and PCS frequencies, thus providing nationwide coverage for PCS subscribers. Indeed, MSS will complement terrestrial mobile communications systems throughout the world, offering total universality of service. MSS is expected to be a crucial component of Future Public Land Mobile Telecommunications Services ("FPLMTS"), an integrated global satellite/terrestrial communication system presently under study by the International Telecommunication Union.^{12/}

^{11/} The Commission has noted that MSS also will meet non-urban public safety needs, "particularly during times of emergency and natural disasters." Report and Order, 2 FCC Rcd 1825, 1844 ¶ 152 (1986). See "Planning for Catastrophe," Satellite Communications, January 1993, at 26.

^{12/} Satellites are recognized internationally as an integral part of FPLMTS. Resolution 212, WARC-92.

C. The Need for Additional MSS Spectrum

As with all radio-based services, the viability of a satellite PCS component is tied directly to the availability of spectrum.^{13/} The existing MSS bands are already overcrowded with operational or proposed MSS systems. Thirty-five foreign MSS systems Advance Published with the ITU operate or plan to operate in the 1.5/1.6 GHz frequencies assigned to or requested by AMSC (1530-1559/1626.5-1660.5 MHz). The Commission recently allocated the 1530-1544/1626.5-1645.5 MHz and the 1616.5-1626.5/2483.5-2500 MHz bands to MSS.^{14/} These new bands, however, will have to be shared among numerous mobile satellite systems

^{13/} During preparations for WARC-92, a U.S. industry working group identified a likely requirement for 355 megahertz of new, additional MSS allocations. The final U.S. proposals to the conference totalled 253 megahertz and included the bands requested herein. Most of the demand for new MSS spectrum is within North America, as evidenced by the significant Region 2 allocations made at WARC-92.

^{14/} See First Report and Order and Further Notice of Proposed Rulemaking, 8 FCC Rcd 4246 (1993); Report and Order, 9 FCC Rcd 536 (1994). In response to market demand, numerous entities are developing systems to provide MSS via both geostationary and non-geostationary satellites. In the U.S., seven new MSS system proposals are pending before the Commission and numerous others have been discussed in the trade press. See, e.g., Applications of Constellation Communications, Inc., File Nos. 17-DSS-P-91, CSS-91-013 (June 3, 1991); Ellipsat Corporation, File Nos. 11-DSS-P-9 (November 5, 1990) and 18-DSS-P-91(18) (June 3, 1991); Loral Qualcomm Satellite Services, Inc., File Nos. 19-DSS-P-91, CSS-91-014 (June 3, 1991); Motorola Satellite Communications, Inc., File Nos. 9-DSS-P-91(87), CSS-91-010 (December 3, 1990); TRW, Inc., File Nos. 20-DSS-P-91(12), CSS-91-015 (June 3, 1991); Orbital Communications Corporation, File No. 20-DSS-MP-90(20) (February 28, 1990). See also Petition for Rulemaking of Celsat, Inc., FCC RM-7927 (February 6, 1992); "Phone Space Race Has Fortune at Stake," Wall Street Journal, January 18, 1993, at B1; "Bird Watching," Cellular Business, July 1993, at 23; "The RCR Top 20 Mobile Satellite Companies," RCR, September 27, 1993, at 16.

operating in the U.S. and abroad, and with incumbent terrestrial services, and, thus, will not have much useable spectrum.

PCSAT anticipates that, by the year 2000, demand for MSS, including PCS-compatible service, will require substantial additional spectrum for a new system such as that of PCSAT. AMSC has already signed over 150 cellular carriers and others to market and distribute service on the system that it will begin operating next year. AMSC's demand forecasts show that this system could reach saturation well before the end of the satellites' useful lives, even if it is augmented with the additional capacity that may be available in other bands for which it has applied. Thus, by acting now to begin the licensing process for a follow-on system, PCSAT is seeking to insure that in the future sufficient capacity will be available both for new and existing MSS customers.

D. There is Spectrum Allocated Internationally for
MSS in the Bands Adjacent to Spectrum Proposed for
Terrestrial PCS

As a result of U.S. efforts, significant amounts of additional spectrum were allocated to MSS at WARC-92 in the 1-3 GHz range, including the bands that are the subject of this Petition.^{15/} Subsequently, the Commission allocated 220

^{15/} Use of the 1970-2010/2160-2200 MHz bands is not permitted before January 1, 2005, except in the United States, where the bands are available in 1996. RR 746B, RR 746C. In any event, three administrations, Tonga, Germany and Inmarsat have already Advance Published satellite networks in the 1970-1990/2160-2180 MHz bands, and others have been filed with the ITU but not yet Advance Published.

(continued...)

megahertz of spectrum (1850-1990 MHz, 2110-2150 MHz and 2160-2200 MHz) for new technologies, including MSS.^{15/} A large portion of

^{15/} (...continued)

Though significant, the new MSS allocations fell short of the 355 megahertz identified by U.S. industry groups as likely to be required to meet demand for the new service. See Comments of AMSC, GEN. Docket No. 89-554, at 6 and Table 2 (December 3, 1990). Moreover, the use of these allocations was conditioned upon the completion of sharing studies by Working Parties and Study Groups of the Radiocommunication Sector. As a result, World Radiocommunication Conferences in 1995 and 1997 are expected to address the use of the new MSS frequencies and potential new allocations.

^{16/} First Report and Order and Third Notice of Proposed Rulemaking, ET Docket No. 92-9, 7 FCC Rcd 6886 (1992). The spectrum is currently occupied by private and common carrier fixed microwave licensees, with the exception of the 2160-2162 MHz band, which is part of a larger band (2156-2162 MHz) available for multipoint distribution service but remains unused. The Commission also has developed a transition plan for relocating existing fixed microwave users in the Emerging Technology Bands to higher frequencies, with the emerging technology licensee bearing the cost. Third Report and Order and Memorandum Opinion and Order, ET Docket No. 92-9, 8 FCC Rcd 6589 (1993), recon. Memorandum Opinion and Order, ET Docket 92-9, FCC 94-60 (March 31, 1994). Moreover, the Commission reallocated five bands above 3 GHz to the private operational and common carrier fixed microwave services for the relocation of fixed licensees in the Emerging Technologies Band. See Second Report and Order, ET Docket No. 92-9, 8 FCC Rcd 6495 (1993).

AMSC asked for reconsideration of the relocation decision on the grounds that the plan does not adequately address the unique needs of MSS, a nationwide service that is costly to implement and which must share spectrum with foreign systems. As such, MSS licensees would be unduly burdened if they are required to pay relocation costs for all fixed microwave licensees nationwide in the 1970-1990/ 2160-2180 MHz bands, which has been estimated at more than \$450 million. Ex Parte Presentation of Motorola, Inc., GEN. Docket No. 90-314 (May 12, 1993). On reconsideration, the Commission stated that specific relocation procedures would be addressed in the proceedings authorizing the specific services. Memorandum Opinion and Order, ET Docket 92-9, FCC 94-60 (March 31, 1994). Id. at para. 69. Thus, the payment of relocation costs should be addressed in a separate proceeding that balances the needs of microwave licensees and MSS interests.

the frequencies in the Emerging Technology Bands have been allocated for terrestrial PCS, but the Commission acknowledged the need for additional MSS spectrum and reserved the 1970-1990/2160-2180 MHz bands for MSS domestically. The Commission also has filed an Advance Publication with the International Telecommunication Union Radio Regulations Board for a U.S. geostationary MSS system in the bands, USASAT 27E, which is scheduled to be operational January 6, 1999.

E. Forty Megahertz of Spectrum Should be Allocated to MSS Domestically

The Commission should complete the process it began in 1992 and expeditiously allocate the 1970-1990 MHz (Earth-to-space) and 2160-2180 MHz (space-to-Earth) bands to MSS. The U.S. has been the leading advocate of an allocation of these bands to MSS and was successful in having these bands allocated to MSS in Region 2 at WARC-92.

These bands are close enough to the Commission's proposed PCS allocations that affordable mobile terminals can be manufactured to operate in these bands with both terrestrial PCS systems and MSS systems. The concurrent licensing of PCS systems and MSS systems in the 2 GHz range will allow service providers and equipment manufacturers to develop equipment that can operate with either terrestrial or satellite systems. Thus, satellite/terrestrial capable PCS terminals costing slightly more than a terrestrial-only PCS terminal will enable communications anywhere in the United States. These paired frequencies are also desirable because they avoid self-interference problems when

considered in conjunction with available feeder link frequencies in the 11/13 GHz bands.

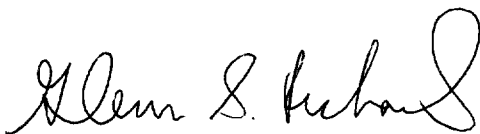
A timely allocation and licensing process will encourage U.S. industry to develop equipment to operate in the new frequencies, equipment which eventually could be exported as other countries provide MSS in the bands. This will increase the global competitiveness of the U.S. satellite industry, creating jobs and stimulating economic growth.

Conclusion

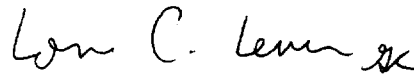
Therefore, based on the foregoing, the U.S. should expeditiously allocate the 1970-1990 MHz and 2160-2180 MHz bands to the Mobile Satellite Service and begin the process of licensing systems to use the frequencies to provide service to the American public.

Respectfully submitted,

PERSONAL COMMUNICATIONS
SATELLITE CORPORATION



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Dated: April 7, 1994

Before the
Federal Communications Commission
Washington D.C.

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

In the Matter of

**Personal Communications
Satellite Corporation**

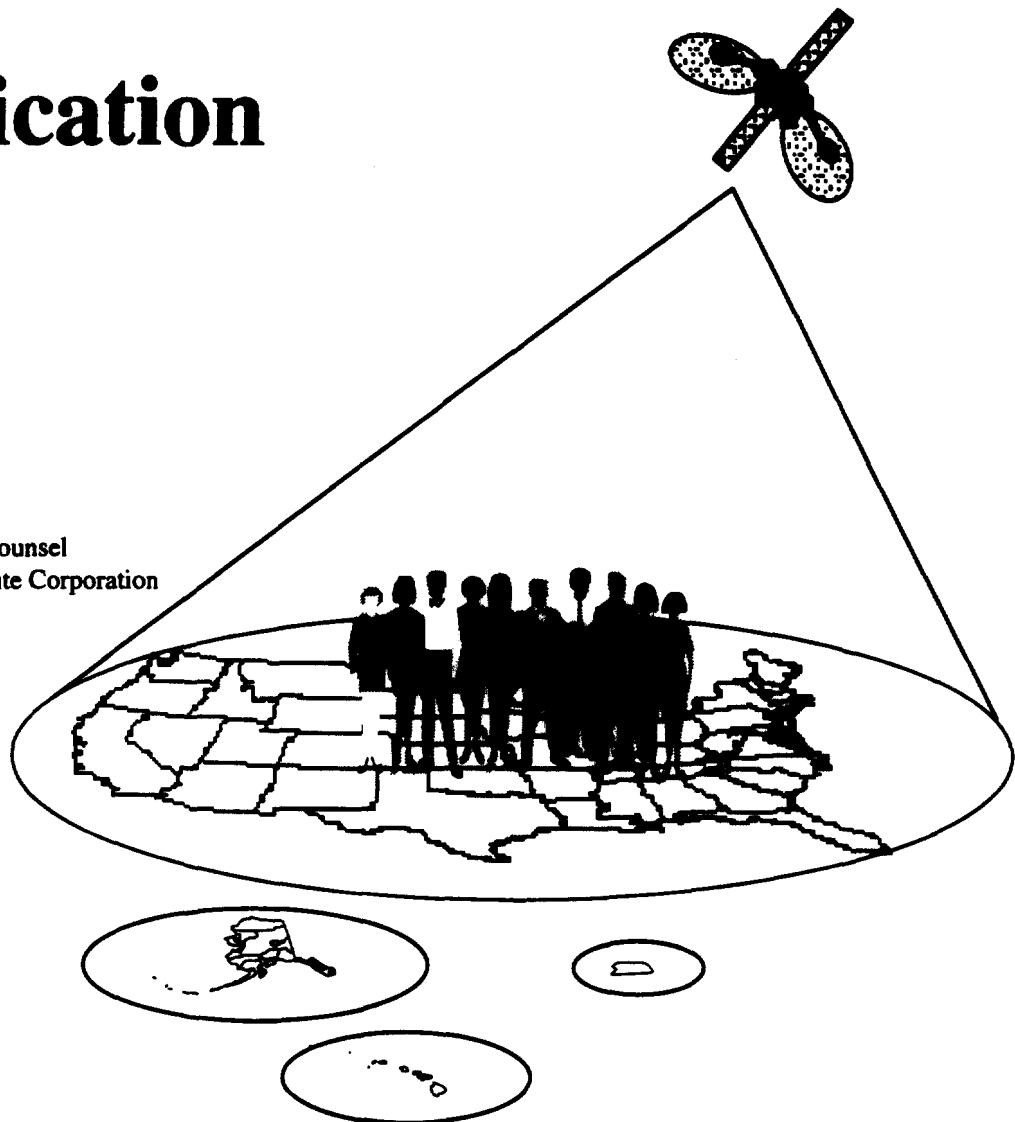
File No. _____

Application for Authority to
Construct a Domestic Communications
Satellite System for the Provision
of Mobile Satellite Service

Application

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April 7, 1994

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BEFORE THE
Federal Communications Commission
WASHINGTON, D.C.

In the Matter of)

PERSONAL COMMUNICATIONS)
SATELLITE CORPORATION)

File No. _____

Application for Authority to Construct a)
Domestic Communications Satellite System for)
the Provision of Mobile Satellite Service)

APPLICATION

Personal Communications Satellite Corporation ("PCSAT") hereby applies for authority, pursuant to Sections 308 and 309 of the Communications Act of 1934, as amended, and Section 25.114 of the Commission's Rules, to construct two domestic communications satellites for the provision of Mobile Satellite Service ("MSS") in the 2 GHz band. The proposed system generally will provide additional capacity to meet the expected growth of MSS demand including satellite service to users of the new personal communications services ("PCS") being developed in adjacent frequencies.

PCSAT proposes to construct an MSS system deploying two high-power commercial satellites, providing service to users in all fifty states, Puerto Rico, the U.S. Virgin Islands and U.S. coastal areas up to 200 miles offshore. The \$872 million system will complement terrestrial PCS systems, providing coverage outside the range of terrestrial systems through the use of dual-mode handheld and vehicular terminals that tune across MSS and PCS frequencies. The system will serve the communications needs of the general public as well

as government, public safety organizations, and the interstate transportation industry. The high power of the satellite means that most users will need only a small antenna to receive uninterrupted high-quality service wherever they may be. PCSAT expects to be serving more than 1.2 million subscribers within five years of beginning operations.

The system is designed to provide 6,300 channels of high-quality voice or 9.6 kbps data, 1,000 video conferencing channels and bandwidth on demand. The system will be capable of being reconfigured at any time to increase or decrease the number of channels of each type to conform to the demand for such services by the public.

PCSAT is a wholly-owned subsidiary of American Mobile Satellite Corporation. PCSAT's principal shareholders have the necessary experience and resources for the development of the proposed MSS satellite system. Another subsidiary of American Mobile Satellite Corporation, AMSC Subsidiary Corporation ("AMSC"), is constructing the U.S. MSS-AMS(R)S system, which is scheduled to be launched in December 1994. See Memorandum Opinion, Order and Authorization, 4 FCC Rcd 6041 (1989); Final Decision on Remand, 7 FCC Rcd 266 (1992); aff'd sub nom. Aeronautical Radio, Inc. v. FCC, 983 F.2d 275 (1993).^{1/} Shareholders of American Mobile Satellite Corporation include subsidiaries of GM Hughes Electronics Corporation, whose Hughes Aircraft subsidiary is the world's leading manufacturer of commercial communications satellites and a major supplier of satellite services; McCaw Cellular Communications, Inc., the world's leading cellular telephone company; Mobile Telecommunication Technologies Corporation, an international

^{1/} American Mobile Radio Corporation, another subsidiary of American Mobile Satellite Corporation, has applied to construct, launch and operate a Digital Audio Radio Services system. File Nos. 10/11-DSS-P-93.

leader in messaging services; and Singapore Telecommunications Pte. Ltd., a world leader in telecommunications.

PCSAT expects that by the year 2000 demand for MSS, including PCS compatible service, will require a system such as PCSAT. AMSC has already signed more than 150 cellular carriers and others to market and distribute service on the system that it will begin operating next year. AMSC's demand forecasts show that this system could reach saturation well before the end of the satellites' useful lives, even if it is augmented with additional capacity that may be available in other bands for which it has applied. By acting now to license the PCSAT system, the Commission will insure that in the future, sufficient capacity will be available both for new and existing MSS customers.

The name and address of the applicant are as follows:

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I. General System Description

A. System Facilities

The PCSAT Mobile Satellite System will be based on a centrally-located, geostationary satellite providing service to the United States, Puerto Rico, the U.S. Virgin Islands and areas up to 200 miles off the U.S. coast. There will also be an in-orbit spare satellite co-located with the on-line satellite to provide continuous service in case of partial or catastrophic satellite failure. The ground segment will consist of a feederlink earth station, a Network Operations Center (NOC) and a Network Communication Controller (NCC). The NOC and NCC will manage operations and access to the satellite. Mobile terminals and gateway earth station channelization equipment will be developed to operate in the 2 GHz bands and accommodate the new mobile satellite services that will be provided in the PCS environment. PCSAT will operate a single feederlink facility to transmit to the satellite, but the system will support feederlinks from additional earth stations that may be used by entities leasing capacity on the PCSAT system.

B. System Operations

The mobile links will operate in the 1970-1990/2160-2180 MHz bands.^{2/} The feederlink facilities will use a portion of the 13/11 GHz Fixed Satellite Services band to provide access to and from the satellite. The satellite will use transparent, frequency translating transponders, allowing it to accommodate the myriad of services and access techniques that are envisioned for PCS. Access to the system can be accomplished via the

^{2/} PCSAT is concurrently filing a Petition for Rulemaking requesting that the Commission allocate the 1970-1990/2160-2180 MHz bands to MSS.

public switched telephone network ("PSTN") on a dial-up basis or through private lines. The system will also be able to support multiple feederlink earth stations by employing FDMA, CDMA or TDMA multiple access schemes.

C. System Services

PCSAT will provide the facilities for a mix of new services, including 7 kHz speech, hi-fi audio, high-speed fax and data transmission, ISDN Basic Rate Interface and video conferencing. These services will be supported in a mobile environment by spot beams on the satellite, a flexible channelization scheme, multifunction multi-rate channel units in the gateway (feederlink) earth station and programmable subscriber terminals that can be configured to operate in multiple environments and support multiple functions. Intrinsic to this concept is providing the user access to bandwidth-on-demand, which may vary based on the type of mobile terminal that is being used, the propagation environment and the type of interconnection that is available on the PSTN.

II. Technical Description

A. Satellite Description

1. Number and Location of Satellites

PCSAT is requesting a satellite location in the arc between 98° and 104° West Longitude. This orbital location provides users relatively high look angles to the satellite from any point in the continental United States, mitigating the effects of shadowing and other propagation phenomena. This central location also permits PCSAT to serve Hawaii, Puerto Rico and Alaska with a single satellite.